

THE AMERICAN BUILT ENVIRONMENT AS AN ECOLOGICAL CHALLENGE

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In 2012 fossil-fuel-based transportation generated 28 percent of all greenhouse gas emissions in the United States. That year motor vehicles—passenger cars and light-duty trucks—spewed 18 percent more CO₂ and other greenhouse gases than they had in 1990, traveling 35 percent more miles. Far too much of the country's built environment is auto-dependent: more than half the population live in sprawling suburbs, a landscape that requires every adult living in every household to have a car in order to function.

This sprawl was built by conscious design. Starting in the 1930s, during the Great Depression, the federal government promoted it with housing policies, specifically through the program of mortgage guarantees of the Federal Housing Administration. The FHA encouraged the construction of new homes over the repair of old ones; it supported the construction of single-family homes instead of multifamily buildings, apartment buildings, or even rowhouses. It encouraged such construction on the urban periphery, on greenfields, rather than in urban cores. It discouraged mixed-use buildings, like ones where a family might live on

the second floor above a shop. It specified a uniform ethnicity, as African Americans were barred from obtaining FHA-guaranteed mortgages. It even specified uniform heights, widths, and setbacks for these new single-family homes.

The culture at large for decades hailed the design of sprawling suburbia as embodying the ideal of the American dream, dovetailing with the American ideology of the independent individual. Given the tiny or nonexistent down payment required on the new house and the long term of the mortgage loans, the choice was simple, as the historian Kenneth Jackson puts it: "quite simply, it often became cheaper to buy than to rent."¹ The FHA insured mortgages for millions of new homes. Middle-class white Americans flocked to the suburbs, which grew by leaps and bounds over the second half of the twentieth century. The number of suburban dwellers grew from 31 percent in 1960 to 51 percent in 2010, meaning about 158 million Americans.²

The character of suburbia was further shaped by zoning, at all levels of government. Before the Second World War, downtowns were, to use a retronym, mixed use: that is, residential, commercial, workplace, and recreational areas nestled more or less alongside one another, people could live in apartments above shops, for example, and walk to work. But the new zoning separated out these functions, consigning them to separate districts. The result of this separate-use zoning was an array of car-dependent pods: residential enclaves, also known as housing subdivisions; shopping enclaves, also known as strip malls; and workplace enclaves, also known as office parks. Since these various enclaves are separated by distance, people had to drive to get from one to the other.

The federal government further promoted automobile use with the 1956 Federal-Aid Highway Act, which authorized the construction of the interstate highway system, which eventually totaled 41,000 miles (66,000 km) of high-speed traffic arteries and multilane limited-access roadways. The federal Highway Trust Fund, with revenues coming from taxes on gasoline, vehicles, and tires, paid for 90 percent of the construction.

In these and many other ways, government policy gave priority to car travel. By contrast, it underfunded mass transit. Streetcars, once

prevalent in cities including Chicago and Los Angeles, languished and then died, largely due to a campaign organized by General Motors.³ Wide streets and plenty of parking have been the twin goals of much of “city planning” since World War II. The planning and layout of cities was essentially handed over to traffic engineers and technicians, whose primary goal was and still is to expedite the continuous, uncongested flow of traffic.

The social and ecological problems generated by sprawl are well known. Above all, suburban lifestyles are environmentally unsustainable: they spew higher emissions than urban ones, due to their dependency on the automobile for every trip outside the home. The single-family homes lack the energy efficiency of multiple unit buildings. And low-density settlement pattern renders suburbia unable to support public transit.

The long distances between destinations, and inadequate sidewalks, disqualify walking as a mode of transportation. Pedestrians who wish to cross an intersection on an arterial connecting enclaves risk their lives, darting across a yawning chasm in brief pauses in traffic. Schools are no longer an easily walk from home: back in 1969, about half (49 percent) of grade-school children walked or bicycled to school, but only 13 percent did in 2009. Parents now routinely drive children to play dates instead of letting them walk. In some suburbs children aren’t allowed to play on sidewalks. The result has been an epidemic of obesity—children today have a one in three chance of getting diabetes.⁴

Governmental, cultural, and economic policy all preferred sprawling suburbia over older cities, whose street layouts dated to the pre-automobile age. But that preference resulted in neglect of those cities. Like any form of human settlement, city neighborhoods have to be maintained by programs of repair. But the FHA did not provide for reasonable loans for the renovation or upgrade of existing urban homes—such loans were small and of short duration, conducive only to minor repairs.⁵ The result was that old houses, buildings, and entire neighborhoods fell into neglect, then decay and deterioration.

Other urban cores were all but suffocated with pavement and

concrete. Eager to lure auto-dependent suburbanites to come downtown, officials and their consultants welcomes even interstate highways into the urban core. They narrowed sidewalks and widened city streets and made them one way. They chopped down street trees, on the assumption that they were "fixed hazardous objects." They demolished graceful historic buildings and on their sites built massive parking lots. "Between one third and one half of urban America's land is typically dedicated to the driving and parking of vehicles," reads one antisprawl manifesto. "In Los Angeles it's two-thirds."

In other places, public officials and private developers created new automobile-dependent cities that gave priority to cars and parking. Phoenix, Arizona, for example, lacks an urban core altogether—it has no pedestrian-scale downtown. In this classic Sun Belt city, "civic life has almost ceased to exist."

Finally sprawling suburbia has had a negative impact on American democracy. By destroying public and civic spaces, it destroys community and sociability. In a traditional compact urban neighborhood, people stroll on sidewalks and in streets, they encounter their neighbors and pause to talk. Frequent street interactions gave rise to familiarity and friendliness and the attachments that are crucial for civic trust and civic engagement. "Lowly, unpurposeful, and random as they may appear," wrote the great urban critic Jane Jacobs, "sidewalk contacts are the small change from which a city's wealth of public life may grow." Moreover, compact mixed-use neighborhoods have gathering places within walking distance of people's homes and workplaces, like the local tavern or the corner store, where they can meet and talk on a regular basis."

But in sprawling suburbia these walkable public spaces are minimized or absent. And cars have the opposite effect: they cut us off from others, making us less sociable. As a person spends ever more time alone behind the wheel of car, he or she becomes "a self-sufficient nation of one," observes one critic. The car "is everything a city is not." As Jeff Speck and his coauthors observe, "As a motorist, you cannot get to know your neighbor, because the prevailing relationship is competitive. You are competing for asphalt. ... The social contract is voided."

Spending more time behind the wheel, people volunteer less, join clubs less, and participate in community projects less. According to the sociologist Robert Putnam, "Each ten additional minutes in daily commute time cuts involvement in community affairs by 10 percent—fewer public meetings attended, fewer committees chaired, fewer petitions signed, fewer church services attended, and so on."¹⁰

The result is the destruction of the public realm. People retreat to their private home, where they interact with the rest of the world via television and computer. They are losing the ability to get along face to face, and even civil conversation is becoming rarer, a specialized art.

Auto-dependent sprawl was built by conscious design; fortunately, it can be unbuilt by conscious design as well. In the past twenty years a new generation of urban planners has emerged, who studied the advantages of the urban built environment over that of suburban sprawl. They are reviving traditional town planning methods and the kind of urban design that was common before the Second World War: an easily identifiable town center; a main street featuring densely mixed commercial and residential buildings—stores, workplaces, and housing; narrow (and hence pedestrian safer) streets lined with trees; a mixture of housing types, including townhouses, rowhouses, and single-family homes; sidewalks and parks; and robust public transit. These planners consider themselves pupils of Jane Jacobs, who enunciated the need for walkable urbanism in the 1960s.

But their ideas date back as well to a radical tradition that sought an integration of town and country at the local level, for the sake of local self-management, the health and well being of all, and advancing a humanly scaled civilization. Beginning with Kropotkin, the tradition evolved through Ebenezer Howard, Lewis Mumford, and Murray Bookchin, among others. Another source is the traditional European city, with its dense core. Léon Krier, a Luxembourgian architect, urban planner, and architectural theorist, has been influential in calling for an "architecture of community" based on a renovation of the European city model.¹¹

The Congress for a New Urbanism, founded in 1993, is a group of

about 2,500 architects, planners, designers, developers, policymakers, journalists, and others who promote the design and building of small-scale neighborhoods as an antidote to sprawl. Its founders were the architects Andrés Duany and Elizabeth Plater-Zyberk, based in Miami; and also the California-based urbanist and architect Peter Calthorpe, a pioneer of urban villages, or transit-oriented, walkable development. The CNU's charter defines it as standing "for the restoration of existing urban centers and towns within coherent metropolitan regions, the reconfiguration of sprawling suburbs into communities of real neighborhoods and diverse districts, the conservation of natural environments, and the preservation of our built legacy."¹²

At almost the same time, at the 1992 Rio summit, the term *smart growth* came into use. The ten smart growth principles, as defined by the U.S. Environmental Protection Agency, resemble those of the new urbanists: (1) mix land uses; (2) take advantage of compact business design; (3) create a range of housing opportunities and choices; (4) create walkable neighborhoods; (5) create distinctive, attractive communities; (6) preserve open space, farmland, natural beauty, and critical environmental areas; (7) strengthen and direct development towards existing communities; (8) provide a variety of transportation choices; (9) make development decisions predictable, fair, and cost effective; and (10) encourage community and stakeholder collaboration in development decisions.¹³

These and other groups share a commitment to several general principles by which we may shape our built environment—in urban neighborhoods, in small or large towns, and even in sprawling suburbia itself—so that it will enhance community and sustainability rather than vitiate them.

First, a sustainable community is dense. Considered on a per-capita basis, compact, dense places—cities—are inherently greener than low-density suburbs. In fact, the average urban dweller has one-third the carbon footprint of the average suburban dweller. For one thing, energy efficiencies are built into the urban infrastructure: in apartment buildings, units share adjoining walls and heat escapes into the units above, so that less energy is wasted than in single-family homes. For another, cities, unlike suburbia, have density sufficient to support public transit.¹⁴

Second, a sustainable community is walkable. In cities, the places where people want and need to go are closer together: destinations are within walking distance. And walkability, as we have seen, has excellent social, ecological, community, and health effects.¹⁵

Third, a sustainable community is mixed use. The new urban planners are discarding separate-use zoning. Using traditional town planning methods, they are bringing houses, stores, offices, civic buildings, and streets into closer proximity. They create easily identifiable town centers with plazas, and other common spaces that welcome pedestrians rather than threatening them with car dominance. Their closely woven, small-scale neighborhoods mix shops and offices with a variety of home types including rowhouses, narrow and tree-lined streets, sidewalks, and parks.

Fourth, a sustainable community is humanly scaled. In the name of density, some planners and architects are building high rises. But others recognize that districts with smaller buildings—humanly scaled buildings—have more vitality. Jan Gehl, the Danish urban theorist who mentored the new generation of planners and architects, studied how humans behave in different urban environments and concluded that the most comfortable building height for urban pedestrians is 12.5 to 25 meters, or about three to six stories.¹⁶

Moreover, the benefits of density are found mostly at the lower end of the density spectrum; increasing density to 20 homes per acre (50 per hectare) produces environmental gains. But achieving densities above about 60 homes per acre (150 per hectare) brings little additional benefit.¹⁷ Hence humanly scaled buildings, as Gehl defined them, bring the benefits of density without the problems brought about by dense high-rises.

Over the past twenty years, the new urbanists, the smart growth movement, and others equipped with these ideas have begun to transform the American approach to urban planning. Their efforts have taken several forms.

Some have created compact, walkable places by going out into open green areas and constructing them anew, like suburbs. The new urbanists' Norton Commons was built on bluegrass outside Louisville, Kentucky;

and Kentlands, in Gaithersburg, Maryland, rose from 350 acres (140 hectares) of former farmland. Such projects have been criticized as "new suburbanism" and tend to be unaffordable. Moreover, building on green space or farmlands is the least desirable approach. Far more desirable, as the smart growth principles advise, is the transformation of existing places.

Another approach is to revitalize pre-automobile urban centers and towns, which fell into neglect and decay in the age of the automobile, or were paved over. They already have density and compactness, a mixed-use infrastructure, corner stores, and hangouts. The bones of their urban cores are scaled to the pedestrian; they have walkable narrow streets, short blocks, and multiple-unit dwellings. Now that we understand the value of traditional neighborhoods, they can and are being rebuilt and renovated. One city that has revitalized along smart growth lines is Minneapolis. The National Trust for Historic Preservation provides information, technical assistance, and advocacy on downtown revitalization in urban neighborhoods, rural towns, and small and mid-sized cities. The list of successes includes Saratoga Springs, New York; Chippewa Falls, Wisconsin; Natchitoches, Louisiana; Encinitas, California; Greenville, South Carolina; and many more.¹⁸

Another approach is to transform automobile-oriented cities by giving them urban centers. Some of the most sprawled-out American cities are reurbanizing in this way. A notable example is Stapleton, Colorado, a massive project designed by Peter Calthorpe on the site of the former Stapleton International Airport. Phoenix, Arizona, the epitome of a low-density, car-dependent city, has adopted a program called Reinvent PHX to create more walkable centers and connect them by public light rail. Smart growth principles are being accepted even in Texas: the city of El Paso now requires that architects working in city projects have accreditation in the new urbanism. And the Texas department of transportation's new rulebook actually recommends new-urbanist street design.¹⁹

The presence of already-existing good public transportation has been an important force for generating smart growth, in what is called transit-oriented development. Arlington, Virginia, home to five Metro stations, has become a dense, mixed-use development. Fruitvale Village

in Oakland, a mixed-use, mixed-income community, was built near a Bay Area Rapid Transit (BART) station, on former BART parking lots. Its buildings are three to four stories tall, with varying dimensions so that pedestrians enjoy a variety of facades and sight distances. "The pedestrian street and plaza also serve as a major community-gathering place," writes one reviewer. Bethesda Row in suburban Maryland is another mixed-use, walkable, transit-accessible development predicated on the existence of a metro station three blocks away. Constructed on the Capital Crescent Trail, a popular biking and walking route, it has building heights range from two to six stories. As the Washington, D.C., metro system expands further, other places near stations, like Rockville and Tysons Corner, Maryland, are recreating themselves with smart growth and new urbanist principles in mind.²⁰

The greatest and most important challenge, however, is to retrofit suburban sprawl itself—to urbanize the suburbs, making them more sociable and sustainable.²¹ The new urban planners, or at least those who have successfully obtained waivers from separate-use zoning codes, are reconfiguring sprawl into neighborhoods with communities.

At present, about two-thirds of the existing twelve-hundred-odd indoor shopping malls in the United States are struggling to survive, due to Internet shopping and changes in people's choices around residence and shopping. Some malls have gone out of business, and when they do die, their huge concrete shells have been put to new uses: as civic centers, medical centers, schools, offices, art spaces, nursing homes, even universities.²² About forty shopping malls have been razed altogether; in their place have risen city halls and parks and even entire downtown cores. Dead big box stores have been converted to schools, churches, and libraries—purposes that enhance community.

For example, in Lakewood, Colorado, one hundred acres (40 hectares) that were once the site of a large regional mall are now dedicated to a development called Belmar: 22 blocks of walkable streets, lined with multiuse buildings and a range of housing types with households. The buildings have photovoltaic arrays and wind turbines on the roofs. Eight bus lines serve this community, which also has two parks. Belmar is the

downtown that Lakewood never had. Now eight of the thirteen remaining regional malls in Denver have said they plan to retrofit.²³

Many parking lots that were built in the early years of sprawl are currently underused, as newer sprawl construction has leapfrogged over them. They now have a relatively central location, and since they so often lie empty, they are in many cases being dug up and repurposed for downtowns for centerless suburbs. The earliest such retrofit, Mashpee Commons, in Massachusetts, was created this way, on top of an old parking lot. Incrementally, the result has been a compact, mixed-use New England village.

Still another aspect of retrofitting is to focus on the corridors. Commercial roadways in sprawl can be retrofitted as complete streets with mixed-use buildings. In Cathedral City, California, a commercial strip corridor has been transformed into a boulevard that became the main street of the town. In sprawling Atlanta, an old rail corridor was retrofitted into a multi-use trail and connected park system, which opened up affordable housing options in forty-five city neighborhoods.²⁴

The final option is to regreen. In some places smart growth principles don't work—for example, a subdivision is just too far from transit, or people have chosen not to live there anymore. They can be returned to green areas or suburban farms. When a shopping mall in Phalen Village, outside Minneapolis, went out of business, the city tore it up and restored the wetland that had been there before. Elsewhere, as in Seattle, creeks and wetlands are being daylighted.

For much of the 2000s, population growth in the outer suburbs continued to be the engine of U.S. residential growth. But recently Americans have started to move in the other direction. From 2010 to 2011, according to census data, outer suburban population growth nearly ceased, increasing by just 0.4 percent. For the first time in twenty years, cities grew faster than suburbs. And for the first time in one hundred years—for the first time since the invention of the automobile—the largest cities grew faster than suburbs. According to land-use strategist Christopher Leinberger, "The pendulum is swinging back toward building walkable urbanism."²⁵

One reason is a demographic shift. A large share of today's millennial generation (the 80 million Americans born between 1977 and 1995) is rejecting the car-dependent lifeways of their parents. Back in 1980, 66 percent of all seventeen-year-olds had their driver's license, but in 2010 the figure was down to 47 percent. Moreover, millennials drive less. They are the first generation since the internal combustion engine was invented to be less enthusiastic about cars and driving than the previous generation. Moreover, having grown up in the suburbs, 77 percent of millennials say they prefer to live in places with walkable neighborhoods, transit, biking facilities, and a lively pulse. That could mean an urban core or an urbanized small town or suburb, but one thing it does not mean is a conventional suburb.²⁶

The baby boomers (about 77 million strong) are retiring or soon to retire; as they do, they may find compact communities with convenient transit to be highly desirable.²⁷ Their choice is unclear, but whatever they decide, a rejection of classic suburbia is under way. American urban form is no longer reflexively being dictated by the automobile, and planners are discarding the old land-use codes that catered to it. In my view, these efforts are among the most promising developments under way in mitigating our carbon footprint.

This essay has focused on the United States, but worldwide, cities now account for most of the world's population. In 2009 the percentage of human beings living in urbanized areas surpassed the percentage living in rural areas. Today 54 percent of people live in cities. In Europe and North America, which industrialized long ago, urban density leads to energy efficiency; but elsewhere city dwellers have higher emissions per capita, simply because they are wealthier than rural dwellers and have greater access to electricity and the conveniences it brings. As a result, in 2013, despite their possible per-capita energy savings, cities geographically accounted for around 70 percent of greenhouse gas emissions and 80 percent of the increase in emissions last year.²⁸

Still urban dwellers are freer to do something about their emissions because their cities are "not beholden to rural, fossil-fuel-dependent constituencies."²⁹ Cities can reduce emissions by adopting rigorous green

building codes, expanding mass transit, switching to electric public vehicles and buses, and adopting smart growth to reduce driving. To do so, they have formed alliances, like the C40 Cities Climate Leadership Group, and the Mayors National Climate Action Agenda. Fifteen of C40's seventy-five member countries have made public commitments to reduce their emissions by 80 percent by the year 2050.³⁰

The goal of urban design should be about more than reducing sprawl, lowering emissions, and achieving sustainability, as important as those goals are. Good urban design should also strengthen our social bonds and foster community. A dense, compact, human-scale built environment can be the infrastructure for community. By enhancing encounters and interactions among people on foot, walkability knits communities together and nourishes the public realm. Good urban design also promotes diversity, so that rich and poor, whites and nonwhites, elderly and young can live near one another and meet in the street. People need opportunities to meet and interact so that they don't become afraid of one another and can learn to talk together. As Duany and colleagues point out in *Suburban Nation*, "A society is healthier when its diverse members are in daily contact with one another."³¹ Walkability strengthens both sustainability and the civic sphere that underpins a robust democracy.

NOTES:

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